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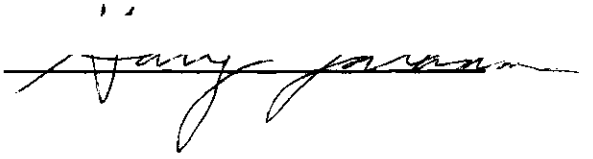

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THE DEVELOPMENT OF JOB PERFORMANCE CRITERIA FOR PULPWOOD PRODUCERS IN THE SOUTHEASTERN UNITED STATES

A THESIS

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The Faculty of the Graduate Division

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TABLE OF CONTENTS

LIST OF TABLES

SUMMARY

The purpose of this study was to conduct a job analysis by means of the critical incident technique in order to develop job performance criteria which define effective and ineffective behavior of pulpwood producers in the Southeastern United States. Three hypotheses were supported: (1) the criteria were comprehensive; (2) categorization of incidents was reliable; (3) the criteria were relevant for five states in the Southeastern United States.

CHAPTER I

INTRODUCTION

The pulpwood industry may be divided into three major components: the paper mill, the wood supplier or dealer, and the pulpwood producer. This study was concerned with one segment of this industry; namely, the pulpwood producer.

The pulpwood producer is a small independent businessman whose primary business interest is a logging operation which he owns and operates. He sells his wood to a wood supplier who in turn sells the wood to a paper mill.

Only within recent years has the pulpwood industry focused attention on the need for improving the job performance of the producer. Research involving the selection, training, and evaluation of producers has often been handicapped by inadequate or inferior procedures for defining effective job performance. A focal problem has centered around progress in a difficult and challenging area in industrial psychology, that of criterion research.

The Criterion Problem

The value of any personnel program, which selects and evaluates employees, is directly related to the degree that it is based upon adequate criteria. No statistical technique, no overwhelming number of cases, no number of experimental replications can overcome basic deficiencies in criterion measures (Simon, 1954). Typical statistical

refinements often have been no more than "blind numerical manipulation" (Guion, 1961). As Simon (1954) has stated, "one cannot predict what does not exist in his criterion measures, nor can one predict what is hopelessly contaminated in them."

In the past there has been relatively little research concerned with criteria. Frequently, criteria were selected on the basis of expediency and convenience rather than adequacy (Jenkins, 1946). For example, Fiske (1951) found that criteria were traditionally selected on the basis of the opinion of some person who had the authority to establish them by fiat. This means that "the whole superstructure of personnel research--with its multiple correlations and confidence levels and other trappings of quantitative, scientific methodology is built upon the weakest of foundations: a residual judgment" (Guion, 1961).

Applicable to this particular research is the fact that a superintendent in a large paper mill may believe that the effectiveness of a pulpwood producer can be determined solely from his current gross sales volume. It can usually be demonstrated empirically that such a criterion is not sufficient. In this particular case, there are alternatives to consider: are producers desirable who book a large number of orders, many of which are cancelled or not repeated; are effective producers those whose volume steadily climbs; or does some weighted combination of these and other variables differentiate the effective from the ineffective producer? This question leads to another criterion problem, viz., the assumption that the criterion measures some unidimensional construct. This assumption ignores the complexity of human activities, the difficulty of defining success, and conditions

extraneous to the individual which can alter his performance (Horst, 1941).

Research has demonstrated that extremely complex criteria are necessary to measure virtually any activity. Seashore et al. (1960) found no support for the "single criterion dimension" notion. Ronan's (1963) work with apprentices and journeymen indicated that any single criterion is of limited use for selection and evaluation. Ronan and Prien (1966), in a review of the literature, clearly showed that job performance is multidimensional. They concluded that an evaluation of job performance with a single criterion is "worse than useless, it is misleading." Dunnette (1963) probably best summarized this position when he said to "junk the criterion! Let us cease searching for single or composite measures of job success and proceed to undertake research which accepts the world of success dimensionality as it really exists."

A review of the literature revealed that regardless of the method by which criteria are selected, most empirical prediction studies of job success employ as criteria some form of ratings. Lawshe and Balman (1966) reported that 67 per cent of all criteria are based on ratings. Yet these are the very devices which are criticized in the literature because of acknowledged weaknesses such as bias, prejudice, and other subjective and extraneous influences on the part of the rater (Blum and Naylor, 1968). This constitutes a further criterion problem; namely, validity.

Jenkins (1946) was among the first to discuss the problem of validity as it relates to criteria. Validity has two aspects--relevance

and reliability (Cureton, 1951). Relevance is defined as the closeness of agreement between criteria and the functions they measure. Reliability is defined in terms of criteria consistency. Criteria may lack reliability because of instability inherent in criteria performance, disagreement between judges, evaluation by incompetent judges, or inadequate sampling (Jenkins, 1946). Criteria may lack relevance because of failure to comprehensively cover the total performance, lack of a relationship between success in training and success in field performance, or intercurrent changes in criteria resulting from administrative or other extrinsic pressures (Jenkins, 1946). To the degree that reliability is lacking, relevance is attenuated; to the degree that relevance is lacking, criteria are useless.

In a series of articles, Flanagan (1949a, 1949b, 1954) described a job analysis procedure for developing behaviorally-based criteria which take into account the previously cited problems. In the history of personnel research, this was the first presentation of a systematic method specifically aimed at isolating the dimensions of performance, and from these, working backward toward selection methods (Ronan and Prien, 1966). The procedure was called the critical incident technique.

The Critical Incident Technique

The critical incident technique (CIT), developed by Flanagan and his associates (1949a, 1949b, 1954), is a systematic procedure for recording direct observations of human behavior which lead to success or failure with regard to the accomplishment of a specific task.

Flanagan (1954) defined an incident as any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. An incident is critical if it makes a significant contribution either positively or negatively to the general aim of the activity or to some stated objective.

In collecting critical incidents, Flanagan (1951) cited five specific conditions which must be satisfied. First, it is essential that actual observations be made of the job activities and the products of those activities. Second, the aims and objectives of an activity must be known to the observer. This requires the use of functional descriptions, i.e., specification of what is necessary to do and not to do if effective behavior is to be achieved. Third, the basis for the specific judgments to be made by the observer must be clearly defined. Objectivity can be attained only if all the observers follow the same rules. Fourth, the observer must be closely associated with the activity he observes, i.e., he must be capable of judging competent or incompetent performance. Typically, a supervisor on the job is in the best position to make such judgments. Fifth, reporting must be accurate. The problem of memory and communication may be overcome by having the observer relate only those incidents which he has observed within the last six to twelve months. In this manner the vague hunches, stereotypes, and opinions are replaced by relatively factual information that is detailed and specific.

When the critical incidents have been collected, the aim is to group similar incidents to reveal the critical requirements of the job

in terms of behaviorally-based indices of performance. The usual procedure is to classify incidents which describe the same behavior into one set or subcategory. Descriptive statements of each subcategory are formed. Statements which are similar are then combined to form one category and the central theme of each category is determined. Thus incidents define subcategories and subcategories define categories. Each category represents one dimension or critical requirement of the job.

Advantages of the Critical Incident Technique

1. The critical incident technique provides criteria which are not based on the opinion of some person who has the authority to establish them by fiat. The developed criteria are based on behavior which is critical to either effective or ineffective performance. Factual information which is detailed and specific is collected from individuals who are closely associated with the job, and who are capable of judging competency or incompetency when they see it occur.

2. The critical incident technique is an objective procedure as compared to the more traditional methods of selecting criteria. Only two value judgements are required from the psychologist. The first judgement requires a decision regarding the people from whom the incidents will be collected, i.e., who is most capable of judging competency or incompetency. The second judgement concerns the meaning of categories into which incidents are classified.

3. The critical incident technique takes into account the multidimensionality of criteria. Each critical requirement is broken down into its component parts and the specific behaviors of each

requirement are defined (Flanagan, 1951).

4. The critical incident technique provides criteria which are valid, i.e., the criteria are reliable and relevant. Andersson and Nilsson (1964) found that although the number of incidents collected by means of an interview was significantly greater than the number collected by means of a questionnaire, the distribution of incidents in categories was not affected. The number of incidents per interview was approximately the same regardless of who conducted the interview. A test of the reliability of the categorization system revealed that there was a strong tendency for judges to agree under which category an incident should be placed.

Content validity, the degree to which the criteria includes a representative sample of all tasks that could have been included (Guion, 1961), was also investigated by Andersson and Nilsson (1964). The contents of the literature used by the enterprise were analyzed to learn if the critical incident data included all the important aspects of the job. The analysis did not reveal any information that could not be classified under the category system.

Andersson and Nilsson (1964) also considered the relevance of the incidents, i.e. their importance for successful job performance. A rating form was constructed in which the 86 subcategories were rated on a six point scale from 0 (unimportant) to 5 (of the greatest importance). Only five subcategories were rated as unimportant by four groups of judges.

5. The critical incident technique provides comprehensive information. Andersson and Nilsson (1964) collected 1,847 incidents.

They classified separately the last 215 incidents and found that these incidents could be placed in the categories which had already been established. Following this, a more detailed analysis was made. All incidents from the same interviewee were placed together. Then the first five per cent of all of the incidents collected from each set of interviewees were put together to form one group. The next five per cent of the incidents were placed in another group, etc. After 20 such groups were formed, it was possible to determine how the number of subcategories increased with the number of collected incidents, i.e., at what stage in the collection procedure the subcategories were formed. Although the number of subcategories increased very rapidly at the beginning of the process, 95 per cent of the subcategories appeared when only two-thirds of the incidents had been classified.

6. The critical incident technique provides information for measuring and evaluating job performance. The critical incidents can be translated rather easily into statements descriptive of actual job behaviors which may be used by observers to describe the characteristic behavior of any individual on the job. All that is required of the observer is a systematic recording of his observations of employee behavior rather than the far more difficult assignment of estimating employee status relative to some quality which is often poorly defined and which either does not include or goes far beyond the relevant aspects of job performance.

7. The critical incident technique has been effective in establishing objective criteria for a wide variety of professions, e.g. grocery store managers (Andersson and Nilsson, 1964), hospital

personnel (Safren and Chapanis, 1960), salesmen (Bridgman, et al., 1958; Kirchner and Dunnette, 1957), hourly wage employees of the Delco-Remy Division of the General Motors Corporation (Flanagan and Burns, 1955), superintendents and general foremen (Flanagan and Miller, 1955; Finkle, 1951), college instructors (Konigsburg, 1954), technical instructors (Smith and Staudobar, 1954), pilot instructors (Krumm, 1952, 1953), psychology instructors (Smit, 1952), life insurance executives (Weislogel, 1952), teachers (Jensen, 1951), airline pilots (Gordon, 1947, 1949, 1950), dentists (Wagner, 1950), scientific personnel (Weislogel, et al., 1950), and military officers (Preston, 1947). At least 80 reports have been published concerning the critical incident technique in the area of criterion research.

Research Objective and Major Hypotheses

The purpose of this study was to conduct a job analysis by means of the critical incident technique in order to develop job performance criteria which differentiate between effective and ineffective pulpwood producers. Three hypotheses were tested: (1) criteria were comprehensive; (2) categorization of incidents was reliable; (3) criteria were relevant for the entire Southeastern United States.

CHAPTER II

RESEARCH PROCEDURE AND METHODOLOGY

Sample

Critical incidents were obtained from a total of 55 wood suppliers.[1] Wood suppliers were interviewed as they are closely associated with the pulpwood producing profession. They are aware of the aims and objectives of the producer's job, and they are capable of judging competent and incompetent job performance when they see it occur. Producers were not interviewed as they do not satisfy Flanagan's (1954) criterion for selecting observers, viz., that observers consist of people who have made numerous observations of different persons engaged in the activity that is being studied. Producers have few opportunities to observe other producers in their work setting. As a result the individual producer would have been limited to reporting incidents based upon his own behavior. When this is the case, the CIT yields results which are biased as it is easier for the individual to recall incidents related to his effective behavior than it is for him to recall incidents related to his ineffective behavior (Ewen, 1964). Moreover, there is a tendency for the individual to relate incidents of effective behavior which can be attributed to causes stemming from

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1. A wood supplier is a businessman who purchases wood from a producer and then sells the wood to a paper mill.

within himself, and to relate incidents of ineffective behavior which can be attributed to factors in the environment rather than to personal inadequacies (Vroom and Maier, 1961). In short, suppliers were interviewed rather than producers in an attempt to increase the objectivity of the data.

The sample was geographically stratified. Each of the six sponsoring companies[2] of the Harvesting Research Project (HRP) of the American Pulpwood Association submitted a list of its paper mills. Six mills were randomly selected and lists were prepared of wood suppliers with whom each mill did business. Ten names were randomly selected from each of the six lists for interview purposes. Substitutions were permitted when those suppliers originally selected were not available. In five cases a substitution was not possible. The interviews took place in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi.

A stratified sample was used for two reasons (Parten, 1950). First, since the population was stratified and a sample was randomly drawn from each stratum, the investigator was relatively certain that none of the essential groups were excluded from the sample. Greater representativeness of the sample was thus assured, and the occasional mishaps that occur in random sampling small numbers from a large population were avoided. Second, as compared to a random sample, a stratified sample yielded names of interviewees who were concentrated

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2. The sponsoring companies are: Union Camp Corporation, Owens-Illinois Incorporated, International Paper Company, Container Corporation of America, St. Regis Paper Company, Georgia Kraft Company.

geographically, thereby reducing the investigator's time and expenses in going from one address to another.

Interview Procedure

All interviews were arranged through the HRP and the sponsor companies. Each interview was conducted with no representative of the HRP (other than the current investigator) or the sponsor company present. At the beginning of each interview, the investigator explained the purpose of the interview, why the interviewee was selected for the interview, what information was expected from him, and the probable use of the results of the study (see Appendix A). Special care was taken to convince the supplier that his statements could not hurt any producer by requesting him not to reveal the name of any person to whom he was referring.

In order to control for the possibility of biasing the interviewees' responses, it was necessary that the investigator adhere rather closely to a predetermined interview format. All questions were phrased in such a manner that answers containing generalities and opinions would be held to a minimum (see Appendix B). In reporting the critical incidents, the supplier was asked to specify the aims and objectives of the producer's job.[3] In this way, it was determined in functional terms what he believed was necessary to do and not to do if a pulpwood

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3. The objective of the producer's job is defined in very general terms in the pulpwood industry. For this reason, the approval or disapproval of a given behavior expressed by an interviewee was the only criterion for accepting an incident as critical.

producer was to be effective. The supplier was then asked to think back over the last six to twelve months of an incident which he himself had observed, and which he believed demonstrated particularly effective or ineffective performance. Effective incidents were requested first. Effective performance was defined as performance which the supplier might wish to cite to other producers, the kind he might wish to observe on the part of every producer, or the kind which he believed contributed significantly to the producer's accomplishment of the objectives of his job. Ineffective performance was defined as performance which, if it occurred repeatedly or even once under certain circumstances, would cause the supplier to seriously doubt the competence of that producer. The terms "effective" and "ineffective" were used in place of "success" or "failure" because of the possible monetary connotation of the latter two terms.

When the supplier indicated that he had thought of an incident, he was requested to specify the circumstances surrounding the incident, to tell exactly what the producer did or did not do, and to explain in full why the incident was effective or ineffective. In this manner the investigator was able to determine the relevance and effect of the incident as related to the objectives of the task. An attempt was made to collect at least five and no more than ten incidents describing both effective and ineffective behavior from each interviewee.

When the interview terminated, the supplier was given a stamped, addressed envelope. The contents of the envelope contained a questionnaire (see Appendix C), the purpose of which was to collect incidents which the supplier either remembered or observed subsequent to the

interview. Questionnaires were to be returned by September 1, 1968. Only five incidents were collected by this method.

Each interview was tape-recorded in order to ensure objective recording and to facilitate the ease and speed of each interview. The incidents were then transcribed in full by a secretarial service.

CHAPTER III

DATA ANALYSIS

Classification of Critical Incidents

Incidents were divided into an effective or ineffective group on the basis of the interviewee's designation. When the incidents had been edited to delete extraneous conversation, they were transcribed on three-by-five cards. A blue card indicated effective behavior, a red card ineffective behavior.

Occasionally, two or more incidents were reported as one. In such instances, each behavior was transcribed on a separate card, and each card was numbered according to the original unedited transcription of the incident. For example, if the original transcription was identified by the number 75, the first behavior within that incident was numbered 75a, the second 75b, etc. In total, 440 incidents were obtained. Two hundred and forty described effective behavior and 200 described ineffective behavior.

At this stage, the last 10 per cent of the incidents (24 effective and 20 ineffective) were deleted in order to test the hypothesis that a sufficient number of incidents was collected. This procedure is discussed in a subsequent section. The remaining incidents were then classified.

Incidents which described the same behavior were grouped into one set. The 216 effective incidents and 180 ineffective incidents

formed 40 and 38 distinct sets respectively.

A descriptive statement was formulated for each set on the basis of the incidents from which it was composed. Sets which were similar were combined to form one over-all category with each set serving as an individual subcategory. The number of categories and subcategories is given in Table 1.

Table 1. The Number of Categories and Subcategories Describing Effective and Ineffective Behavior

Effective Behavior		Ineffective Behavior	
Category	Subcategory	Category	Subcategory
I	6	I	9
II	3	II	5
III	8	III	6
IV	2	IV	5
V	6	V	4
VI	7	VI	8
VII	5	*VII	1
VIII	2		
*IX	1		

Descriptive statements for each category were formulated with regard to the respective subcategories and the purpose for which the data were collected, viz., to establish job performance criteria. The category statements were thus directed at presenting on-the-job behaviors in accordance with Flanagan's (1954) recommendation that

* Miscellaneous categories

the headings "represent either well-marked phases of the job or provide a simple framework for classifying on-the-job activities that is either familiar to or easily learned by supervisors." In this case the term supervisor was replaced by the term wood-supplier.

The critical incident categories and subcategories are given in Table 2. The categories represent the performance dimensions of the producer's job, i.e. each category represents a criterion for a particular dimension which defines effective or ineffective job performance. Subcategories represent the actual behavior by which a producer demonstrates effective or ineffective performance. Essentially eight dimensions define the job performance of the producer as six of the eight categories which define effective performance are similar to the six categories which define ineffective performance. A producer must be effective on each if he is to be successful. Failure on any one count could lead to failure on the entire job.

In many cases, ineffective behavior is simply the converse of effective behavior. However, this is not always true. Setting goals or quotas with regard to the amount of wood to be produced in a given day or week indicates effective performance. The converse of this behavior does not indicate ineffective performance. In short, the absence of one behavior does not necessarily imply the presence of another.

The job performance criteria are listed with brief discussion. No distinction is made here between effective and ineffective performance.

I. Planning, Scheduling and Work Performance: This criterion

Table 2. Categorization of Critical Incidents

Effective Behavior

I. Planning, Scheduling and Work Performance

A. Plans work with regard to weather conditions
B. Sets goals or quotas
C. Uses week-ends to prepare for the following week of work
D. Carries extra tools, equipment, or supplies
E. Does not waste timber
F. Works a full day or week regardless of circumstances

II. Safety

A. Dresses crew in clothing designed for safety
B. Recognizes and avoids potentially dangerous situations (e.g. lodged trees, improper use of equipment)
C. Keeps special safety equipment or supplies

III. Financial Responsibility

A. Keeps books or records on all facets of his business
B. Establishes a good credit rating
C. Handles his own financing
D. Purchases or replaces essential equipment
E. Purchases highly mechanized equipment
F. Makes wise financial investments
G. Saves money
H. Files Social Security and insurance

IV. Operating Equipment

A. Repairs his own equipment
B. Refuses to operate equipment in need of repair

V. Public Relations

A. Goes out of his way to help a dealer or a producer
B. Seeks advice of dealer on special problems
C. Keeps dealer informed of his operation
D. Purchases all or most of his own timber
E. Is scrupulously honest
F. Executes deeds which are recognized and commended

Table 2 Continued

VI. Supervision

A. Remains with the crew constantly
B. Gives instructions and explanations
C. Provides training
D. Sets minimum standards of behavior
E. Organizes crew so that work is continuous
F. Allows group decisions
*G. Commands loyalty and respect
H. Operates in the role of a supervisor rather than a worker

VII. Use of Rewards

A. Pays good wages
B. Provides incentives or bonus systems
C. Does special favors for crew at his own inconvenience
D. Provides rest breaks
E. Initiates a spirit of competition

VIII. Shows Ingenuity: Improves Equipment or Procedure

A. Devises, initiates, improves or changes a method or procedure
B. Devises, designs , or improves a tool or equipment

IX. Miscellaneous

Ineffective Behavior

I. Planning, Scheduling and Work Performance

A. Cannot or will not work in wet weather
B. Does not use week-ends to prepare for the following week of work
C. Loafs on the job

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* This subcategory did not appear until the last 10% of the incidents were classified.

Table 2 Continued

D. Does not carry extra tools, equipment or supplies
E. Does not work a full day or week
F. Does not fell trees according to proper procedures
G. Does not cut stumps to the proper level or height
H. Does not cut wood according to specified standards
I. Leaves merchantable timber

II. Safety

A. Permits the operation of equipment which lack protective features
B. Allows the operation of equipment in an unsafe manner
C. Allows the use of alcoholic beverages on the job
D. Permits fires in the woods
E. Involves others in dangerous or fatal incidents

III. Financial Responsibility

A. Lacks proper accounting procedures
B. Lacks credit
C. Purchases highly mechanized equipment unwisely
D. Makes poor financial investments
E. Fails to file Social Security or insurance
F. Intentionally remains in debt

IV. Operating Equipment

A. Operates equipment in need of maintenance
B. Repairs equipment improperly
C. Abuses equipment
D. Fails to get maximum use from equipment
E. Lacks mechanical aptitude

V. Public Relations

A. Unethical conduct.
B. Does not or will not cut the wood according to the land-owner's instructions
C. Cuts unmarked timber
D. Destroys property unnecessarily

VI. Supervision

A. Does not stay in the woods with the crew

Table 2 Continued

B. Does not give instructions or explanations regarding proper procedures
C. Does not provide training
D. Loses control of emotions in his interactions with the crew
E. Breaks promises to the crew
F. Operates as a member of the crew rather than as a supervisor
G. Does not enforce his commands
H. Distracts crew from their tasks

VII. Miscellaneous

is concerned with the manner in which the producer plans his work. This includes setting up a logical systematic work plan and maintaining work despite job difficulties.

II. Safety: This criterion emphasizes the observance of established safety regulations. Also included are behaviors involved in making judgments concerning the relative safety of certain actions which are not covered by any specific regulation.

III. Financial Responsibility: Subsumed under this criterion are behaviors which are essential for financial independence.

IV. Operating Equipment: This criterion primarily concerns behavior involved in the correct operation of equipment during normal job conditions.

V. Public Relations: Behavior included in this criterion involves seeking out the best sources of information pertinent to given problem areas, fulfilling personal commitments, and honesty and fairness in dealings with associates. Activities which are not directly related to the job, but which indicate the producer's interest in his work are also included.

VI. Supervision: The emphasis in this criterion is on recognition of the crew's need for regular and closely supervised attention, giving clear and detailed instructions, planning and coordinating the work of the crew, making decisions and taking action based on those decisions, providing training, fulfilling promises, and fostering cooperation within the group.

VII. Use of Rewards: This criterion stresses the recognition or acknowledgement of a crew's effective performance, and implementing

the means by which to maintain this performance. Included in this criterion is behavior which indicates an interest in the crew's welfare.

VIII. Shows Ingenuity: This criterion concerns creative or imaginative behavior through which techniques, procedures, or materials are devised or modified to fulfill certain plans, or to adjust to changes in conditions.

The last two criteria are concerned solely with effective performance. Examples of critical incidents which define each criterion are included in Appendix E.

Comprehensiveness of Critical Incidents

The first hypothesis in this research was that the collection of incidents was sufficiently comprehensive. In order to test this hypothesis, two procedures were followed.

The last ten per cent of effective and ineffective incidents were excluded from the classification system. When the classificatory system was completed, these incidents were examined to see if any new behaviors appeared. If the addition of these incidents necessitated the addition of only one or two new subcategories, it was concluded that adequate coverage had been achieved. The results indicated that one effective incident could be applied to a category in which there was no suitable subcategory. The incident was of sufficient importance to necessitate a new subcategory, viz, VI G: Commanding loyalty and respect.

The second test was applied by selecting each incident at random

to be reclassified according to the original classification system. A record was made to determine the increase in number of subcategories with the increase in number of incidents, i.e., when in the classification procedure the various subcategories appeared. If 90 per cent of the subcategories were present when 75 per cent of the incidents had been classified, it was concluded that the collection of incidents was not terminated prematurely. The results are given in Table 3.

Table 3. The Cumulative Percentage of Incidents and Subcategories

Effective Behavior		Ineffective Behavior	
Incidents	Subcategories	Incidents	Subcategories
25%	72%	25%	70%
50%	92%	50%	84%
75%	100%	75%	92%

When 75 per cent of the incidents had been classified, 100 per cent of the effective subcategories and 92 per cent of the ineffective subcategories had emerged. Thus, the first hypothesis was accepted.

Reliability of the Classification System

The second hypothesis was that the classification of the critical incidents into the given categories has high interjudge reliability. To test this hypothesis, the incidents were classified by the present writer according to procedures previously cited (see Classification of Critical Incidents). The critical incidents were then placed in random order and were given to two judges who worked independently to classify the incidents according to the established category system.

A miscellaneous category was provided for judges to classify incidents which they could not place in any of the existing categories.

The interjudge reliability for each category was determined by calculating the percentage agreement between the three judges. The number of incidents that all three judges agreed should be placed under a given category was computed over the total number of unique incidents classified in that category. In terms of set theory, the percentage agreement represented the intersection of incidents classified by the three judges divided by the union of the incidents multiplied by 100 per cent. Thus, if Judge A classified incident number 26, 101, and 118 under Category I, Judge B classified incident number 26, 101, 118, and 199 under that category, and Judge C classified incident number 26, 101, 118, and 203 under the same category, the interjudge reliability for that category would be calculated as follows:

$$\frac{26,\ 101,\ 118}{26,\ 101,\ 118,\ 119,\ 203} = .60 \times 100\% = 60\%$$

As can be seen from this example, if any judge deviated from the other two by as little as one or two incidents, the resulting reliability coefficient tends to be attenuated.

If the percentage agreement for each category was greater than or equal to 80 per cent, the reliability of the classification system was considered satisfactory.

The interjudge reliability for each category is presented in Table 4. The classification of the incidents into the categories and subcategories by each of the three judges is given in Appendix D.

Table 4. The Reliability of the Classification System

Effective Behavior				Ineffective Behavior			
Category	Intersection of incidents	Union of incidents	Percentage agreement	Category	Intersection of incidents	Union of incidents	Percentage agreement
I	34	40	85%	I	52	54	98%
II	17	19	89%	II	16	17	94%
III	51	60	81%	III	28	34	82%
IV	17	19	89%	IV	33	40	83%
V	29	35	83%	V	32	39	82%
VI	29	34	85%	VI	24	29	83%
VII	22	23	96%	*VII	0	6	-
VIII	11	24	46%				
*IX	1	9	11%				

The interjudge reliability for only one category was below 80 per cent, viz., Category VIII, "Shows Ingenuity." There are at least two reasons for this low percentage of agreement. First, ingenuity is difficult to evaluate objectively. Behavior which is evaluated as ingenious by one observer may not be so evaluated by someone else. Second, the method used to determine interjudge reliability is extremely conservative with small numbers. Disagreement between judges concerning only a few incidents severely restricted the resulting reliability coefficient. This category should be deleted or used with caution in the evaluation of pulpwood producers.

In general, it was concluded that the classification of incidents was reliable. Thus, the second hypothesis was accepted.

* These are miscellaneous categories and are not included in the discussion.

Relevance of Criteria

The third hypothesis was that the performance criteria were relevant for the Southeastern United States, i.e., the criteria were not limited to any one geographical region in that area. Relevancy was defined in terms of the contribution that a category, i.e., the behavior that it represents, makes to the successful performance of a producer in his actual work setting. In order to test this hypothesis a questionnaire was constructed (see Appendix E) which requested that each subcategory be rated on a six-point scale from extremely important to extremely unimportant. A critical incident was provided under each subcategory to exemplify the behavior represented.

Questionnaires were sent to 269 wood suppliers. Forty names were randomly selected from each of six states, viz., Virginia, North Carolina, South Carolina, Georgia, Alabama, and Texas. Twenty-nine persons defined the population of suppliers in Arkansas, and questionnaires were sent to all 29 suppliers. Questionnaires were not sent to suppliers who had contributed critical incidents.

Fifty-eight per cent of the questionnaires were returned. Only 41 per cent were analyzed as 46 questionnaires were discarded. The 25 questionnaires returned from North Carolina were discarded as there was reason to believe that several questionnaires had been biased by one individual. The seven questionnaires returned from Texas were not analyzed as a decision had been made prior to the data collection that a minimum of 14 questionnaires had to be collected from a given state in order for that state to be included in the data analysis. Fourteen questionnaires from the remaining states were

discarded as they had not been completed correctly.

The individual ratings for each subcategory were combined to obtain an overall rating for each category. The mean and standard deviation for each category is given in Table 5. None of the categories was rated below 3 (3 indicated that the category was important) by any of the five states.

The ratings were subjected to a multivariate analysis of variance to determine whether the five states differed in their rating of the 14 categories. The assumptions underlying this test are analogous to the univariate analysis of variance, viz. that the within cell residuals have a multivariate normal distribution with a common covariance matrix, and that observations are uncorrelated (Jones 1966).

The experimental design was a t dimensional analysis of variance ($t = 1$) with 14 dependent variables. The null hypothesis was that there was no significant difference between the five states in the rating of the 14 categories.

The largest root criterion was used to effect a significance test. This criterion has a characteristic equation of the form $|M_h - \lambda Me| = 0$ where M_e is a q x q matrix or error sum of squares and M_h is a matrix of sums of squares and products for a classification variable (Jones, 1966). The number of non zero roots of this equation can be shown to equal df_h, the number of degrees of freedom association with M_h or q, the number of dependent variates, whichever is smaller. For the characteristic equation to yield a solution, M_e must be nonsingular, which in turn requires that the number of variates q, be no larger than df_e for error, i.e., the number of

Table 5. Mean and Standard Deviation for Each Category

(in each block, row 1 denotes the raw mean, row 2 denotes the standard deviation, and row 3 denotes the category mean adjusted for number of subcategories)

	State				
	VA.	S.C.	GA.	ALA.	ARK.
Cell Size	27	17	26	23	17
Category					
1	23.56	23.65	24.62	24.54	23.76
Effective	5.61	4.05	3.09	2.71	2.75
Work Performance	3.93	3.94	4.10	4.09	3.96
2	11.37	11.59	13.00	10.43	12.29
Effective	3.54	2.76	1.18	2.87	2.29
Safety	3.79	3.86	4.33	3.48	3.90
3	30.96	30.65	29.15	27.79	31.18
Effective	7.68	7.20	5.77	6.55	4.94
Finances	3.87	3.83	3.64	3.47	3.90
4	7.59	7.12	7.92	7.82	8.74
Effective	2.08	1.32	1.41	1.74	1.38
Operating Equipment	3.80	3.56	3.96	3.91	4.24
5	21.41	20.65	21.19	20.13	22.53
Effective	5.90	5.15	3.30	4.74	4.73
Public Relations	3.57	3.44	3.53	3.36	3.76
6	28.70	30.41	28.88	28.61	30.53
Effective	7.64	5.65	4.85	4.33	5.09
Supervision	3.56	3.80	3.61	3.58	3.82
7	16.81	16.29	16.04	15.35	16.24
Effective	5.15	3.62	3.19	2.41	3.91
Rewards	3.36	3.26	3.28	3.57	3.25
8	7.37	7.41	7.12	6.65	7.59
Effective	1.98	1.73	1.66	1.50	1.62
Ingenuity	3.69	3.71	3.56	3.33	3.80
9	31.85	35.79	37.42	36.74	38.76
Ineffective	8.88	7.58	5.44	7.56	5.44
Work Performance	3.54	3.95	4.16	4.08	4.30

Table 5 continued

Category	VA.	S.C.	GA.	ALA.	ARK.
10	19.19	20.29	21.08	20.52	21.53
Ineffective	5.02	4.33	3.01	4.33	3.71
Safety	3.84	4.06	4.22	4.13	4.31
11	23.00	24.82	25.12	23.13	25.35
Ineffective	5.89	4.24	4.13	5.71	3.92
Finances	3.83	4.14	4.19	3.86	4.23
12	18.93	19.47	19.65	18.04	20.06
Ineffective	4.45	4.19	2.64	3.84	3.17
Operating Equipment	3.63	3.90	3.93	3.61	4.01
13	16.48	16.65	17.65	16.57	17.29
Ineffective	3.37	3.43	2.59	3.99	2.66
Public Relations	4.12	4.16	4.41	4.14	4.32
14	30.22	32.41	32.62	30.43	31.76
Ineffective	7.64	5.93	4.54	7.29	4.68
Supervision	3.78	4.05	4.08	3.80	3.97

degrees of freedom associated with M_e (Jones, 1966).

The largest root criterion ($\frac{\lambda}{1+\lambda}$) yielded a value of .346. Heck charts (Heck, 1960) indicated that this value was significant at the .01 level.

The correlations between the discriminanat function and the original variables are given in Table 6. From inspection of this Table and Table 5, it appears that Virginia's rating of category 9 (ineffective scheduling of work performance) was responsible for the significant difference.[4]

The hypothesis that the criteria were relevant for the entire Southeastern United States could not be tested as some states were excluded from the analysis and the remaining states were not selected at random. However, the criteria were shown to be relevant for five states, although the relative importance of one criterion (ineffective scheduling of work performance) appears to vary among the different states.

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4. On the recommendation of Dr. Bargmann, individual F tests were inspected. Only the ratings of category 9 yielded a significant F at the .01 level.

Table 6. Correlations Between the Discriminant Function and the Original Variables

Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Correlation	.14	.02	-.20	.17	.07	.01	.18	.17	.40	.21	.06	.06	.07	.05

CHAPTER IV

RESEARCH CONCLUSIONS AND RECOMMENDATIONS

Limitation of This Research

This research suffered from the following limitations. First, it was a pioneer study in a field in which there has been relatively little research by industrial psychologists. The generality of the results are therefore limited. Only two studies of a psychological nature pertaining to any segment of the pulpwood industry have been reported in the scientific literature. Hamilton and Stock (1962) identified the importance of crew aggressiveness. Loudermilk recently (1966) attempted to determine optimal predictors of effective job performance of lumber and paper mill employees.

Second, the study was limited on methodological grounds. Although the critical incident technique represents one of the few systematic attempts to define job performance in terms of its complexity and specifics, it should not be viewed as a panacea by all who use it. First, it is dependent upon observation and the question can be raised with regard to reliability (Ronan and Prien, 1966). As Safren and Chapanis (1960) have stated, selective perception may affect the type of incidents perceived, selective recall the ones remembered, and motivational factors, the ones reported. In addition, group factors may affect the results. For example, logging superintendents who are employed by paper mills may be more

alert to certain types of incidents than are suppliers. Before the results of this study are accepted as definitive, the study should be replicated on samples from different populations in the pulpwood industry.

Recommendations

A comprehensive critical incident follow-up study should be employed using large samples from different populations. The analysis of the data should permit answers to the following questions:

1. Are there differences between the various populations of interviewees with regard to the kinds of incidents they tend to report?

2. Are there differences in the frequency of effective and ineffective behaviors reported by the different populations?

3. Are there differences in the frequency of effective and ineffective behaviors reported for producers of various age levels?

4. Are there differences in frequency of effective and ineffective behaviors for producers with varying levels of experience?

Answers to similar questions with regard to pilot instructors were investigated by Krumm (1952).

Different methodological approaches should be employed in studying the producer's job performance to see if similar results are obtained. A single method of measurement raises questions as to the generality of the findings. It would be fallacious to assume that the results are definitive unless they are corroborated by different methods. The problems of criteria development have not as yet been completely resolved and no one method has been shown to be completely

adequate.

Finally, the performance criteria should be used in the field to see if effective and ineffective performance can be reliably discriminated. This could be done by selecting in advance the names of producers who are demonstrably effective or ineffective. Observers who are unaware of the predetermined classification could then evaluate the producers on the basis of the developed criteria. In this manner observer bias could be controlled.

Summary and Conclusions

This research was one of the first systematic investigations to define the specific activities performed by pulpwood producers which lead to successful or unsuccessful performance. With such information, it is possible to pinpoint areas of strength or weakness in a given producer. The value of this research is that opinions and hunches regarding the definition of an effective producer have been replaced by objective criteria.

Three hypotheses were supported: (1) the criteria were comprehensive; (2) categorization of the incidents was reliable; (3) the criteria were relevant for five states in the Southeastern United States.

APPENDIX A

STANDARD INTRODUCTORY PROCEDURES FOR THE INTERVIEW

A. Standard Introductory Statements: The following statements were made by the interviewer after rapport had been established with the interviewee.

1. The Harvesting Research Project of the American Pulpwood Association is making a study of the pulpwood producer in order to learn just what effective or competent work as a producer includes. We believe that you are especially well qualified to tell us about the producer as you are closely associated with the profession; you are aware of the aims and objectives of the job; and you are considered capable of judging competency with respect to one or more phases of the job.

2. I am going to ask you some standard questions about your experience with pulpwood producers. Please do not indicate the names of any persons involved in answering my questions.

3. The questions that I will ask can be answered by simply describing specific incidents which you yourself have seen occur within the last six to twelve months.

4. In reporting an incident, I will ask you to first describe what the circumstances were that surrounded the incident, including what task or tasks the man was trying to do. Then I will ask you to tell me exactly what it was that the man did, and why it was effective or ineffective.

5. Feel free to use technical language. When you use a term that I do not understand, I will ask you about it.

6. The incidents you report will be pooled with incidents obtained from other dealers. We will then classify the incidents in an attempt to define the effective and ineffective performance of the producer.

7. The results of this study will be used to develop criteria which will be of value to the industry in evaluating producers.

8. Would you like to ask me any questions?

APPENDIX B

SEQUENCE OF STANDARD QUESTIONS FOR THE INTERVIEW

A. The following questions are listed in the order in which they were presented to the interviewee.

1. What in your opinion is the primary purpose of the pulpwood producer's job?

2. (If applicable) How would you summarize your last few statements?

3. Fine, now I would like you to think back over the last six to twelve months of an incident in which you observed effective job performance. By effective performance, I mean the kind of performance which when you saw it occur, you wanted to tell other producers about it, the kind which you wished you could see on the part of every producer in a similar situation, or the kind which you felt contributed significantly to the accomplishment of the producer's task.

4. Have you thought of such an incident? (If the answer is no): Well, maybe this reminder will help. An incident is acceptable if it concerns doing especially well in performing any single task related to the job.

5. You have thought of an incident? Good.

6. Did this incident occur within the last six to 12 months?

7. What were the circumstances leading up to the incident?

8. Exactly what did the man do?

9. Exactly what was it that made this incident an example of doing especially well on the job.

10. That was fine. Can you think of another incident? (The above procedure was repeated until either a maximum of ten incidents were collected, or the interviewee reported that he could not think of any additional incidents.)

11. Now let us look at the other side of the picture.

Appendix B Continued

12. This time I would like you to think back over the last six to 12 months of an incident which if it occurred repeatedly, or even once under certain circumstances would cause you to doubt the competency of that producer.

13. (The remaining questions were similar if not identical to questions 4-10.)

AMERICAN PULPWOOD ASSOCIATION
HARVESTING RESEARCH PROJECT

REPLY TO: 1571 NORTHEAST EXPRESSWAY, N.E.
ATLANTA, GEORGIA, 30329
404-633-5137

APPENDIX C

A SAMPLE LETTER AND QUESTIONNAIRE
REQUESTING ADDITIONAL CRITICAL INCIDENTS

Dear Sir:

It has been our experience that shortly after the interview has terminated, the interviewee remembers many incidents which he simply could not recall during the interview. If this is your case, would you please complete the enclosed questionnaire and send it to the APA-HRP. If you should observe new incidents, we would be glad to learn of them also.

The APA-HRP appreciates as many incidents as it can get, and thanks you for your kind cooperation.

Yours truly,

Gary Latham

Gary Latham
Project Assistant

GL:pg
Enclosure

Appendix C Continued

A SAMPLE QUESTIONNAIRE REQUESTING CRITICAL INCIDENTS

Directions:
Think back over the last six to 12 months of an incident which you believe is an example of effective job performance. By effective performance, we mean the kind of performance which when you saw it occur you wanted to tell other producers about it, the kind which you wished you could see on the part of every producer in a similar situation, or the kind which you felt contributed significantly to the accomplishment of the producer's task. Please report only those incidents which you yourself saw occur within the last six to 12 months.

1. Did this incident occur within the last six to 12 months?

2. What were the circumstances leading up to the incident?

3. Exactly what did the man do?

4. Exactly what was it that made this incident an example of doing especially well on the job?

Think back over the last six to 12 months of an incident which if it occurred repeatedly, or even once under certain circumstances, would cause you to doubt the competency of that producer.

1. Did this incident occur within the last six to 12 months?

2. What were the circumstances leading up to the incident?

3. Exactly what did the man do?

4. Exactly what was it that made this incident an example of doing especially poorly on the job?

APPENDIX D

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Effective Behavior: Incident Number									
I	A	A	4	10	17	64		163	164	165	166	173
		B	4	10	17	64	84b	163	164	165	166	173
		C	4	10	17	64		163	164	165		173
	B	A	3a	45a	51a	53	55b	56b				
		B	3a	45a	51a	53	55b	56b				
		C	3a	45a	51a	53	55b	56b				
	C	A	72	77	80b	82	84b	86a	89	133	136	
		B	72	77	80b	82		86a	89	133	136	
		C	72		80b	82	84b	86a	89	133	136	
	D	A	70									
		B	70									
		C	70									
	E	A	14	41	66a	168	171	199b				
		B	14	41	66a	168	171	199b	170			
		C	14	41	66a	168	171	199b	170			
	F	A	9	36	37	38a	39a	205	175			
		B	9	36	37				175			
		C	9	36	37	38a		205	175	166	38b	
II	A	A	150	152	154	155a	156b	160	161	174a		
		B	150	152	154	155a	156b	160	161	174a		
		C	150	152	154	155a	156b	160	161	174a	156a	
	B	A	69	153	158	159	162	174b	180			
		B	69	153	158	159	162	174b	180	157		
		C	69	153	158	159	162	174b				
	C	A	151	155b	156a							
		B	151	155b	156a							
		C	151	155b								

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Effective Behavior — Incident Number									
III	A	A	24	25b	26	28	33	34				
		B	24	25b	26	28	33	34				
		C	24	25b	26	28	33	34				
	B	A	32	35b	181							
		B	32	35b	181							
		C		35b	181							
	C	A	20	33	27	30	35a					
		B	20	33	27	30	35a					
		C	20	33	27	30	35a	32				
	D	A	68	74	79a	103	110a	146	178	183	195	
		B	68	74	79a	103	110a	146		183	195	104b
			107	141b								
		C		74	79a	103	110a				195	
			107		21							
	E	A	40a	90	91	92	93	95	96	98a	99	201
			102	104b	105a	106	107	110b	111	141b	141c	143
			182	188	192	193	194	200b	191			
		B	40a	90	91	92	93	95	96	98a	99	201
			102		105a	106		110b	111		141c	
			182	188	192	193	194	200b	191	101a	195	
		C	40a	90	91	92	93	95	96	98a	99	201
			102	104b	105a	106		110b	111	141b	141c	
						192	193	194	200b			
	F	A	148	179	190							
		B	148	179	190	100	29	144	178			
		C	148	179	190	100		144	178	172	176	146
			97	183	101a							
	G	A	21	31	194a							
		B	21	31	199a							
		C		31	199a							
	H	A	22	25a								
		B	22	25a								
		C	22	25a								

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Effective Behavior: Incident Number									
IV	A	A	86	71b	73	76a	78	79b	83	86b	87	88
			177	189								
		B	86			76a	78	79b	83	86b	87	88
			177									
		C	86	71b		76a	78	79b	83	86b	87	88
			177	189	77							
	B	A	66b	71a	75b	85	186c	196a				
		B	66b	71a	75b	85	186c	196a	71b	189		
		C	66b	71a	75b	85	186c	196a				
V	A	A	113	114	116	117	118	126	130	141	197	
		B	113		116	117		126	130		197	
		C	113	114	116	117	118	126	130		197	122
	B	A	80a	108a	119	125	200a					
		B	80a	108a	119	125	200a					
		C		108a	119	125	200a					
	C	A	84a	131								
		B	84a	131								
		C	84a	131								
	D	A	128	135	137	147	196b	198	202			
		B	128	135	137	147	196b	198	202			
		C	128	135	137	147	196b	198	202			
	E	A	115	129	132							
		B	115	129	132	114	134					
		C	115	129	132			80a	124			
	F	A	61	123	127	134						
		B	61	123	127		116	118	126			
		C	61	123	127	134				73		

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Effective Behavior Incident Number									
VI	A	A	36	5	7	12	19	38b	63b	167	186b	
		B	36				19		63b	167	186b	16
		C	36		7	12	19		63b	167	186b	
	B	A	15	47	75a	120	169	185	186a			
		B		47	75a	120	169	185		149		
		C		47	75a	120	169	185	186a			
	C	A	1	65a								
		B	1	65a								
		C	1	65a								
	D	A	18	39b	157	184						
		B	18	39b		184	15	38b	39a	38a	186a	
		C	18	39b	157	184	15					5
	E	A	2	6	8a	40b						
		B	2	6	8a	40b	5	7				
		C	2	6	8a	40b						
	F	A	52									
		B	52									
		C	52									
	G	A	46									
		B	46									
		C	46									
	H	A	11	13	16							
		B	11	13		12						
		C	11	13	16							

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Effective Behavior: Incident Number									
VII	A	A	50	54	63a	139						
		B	50	54	63a	139						
		C	50	54	63a	139						
	B	A	45b	48	49	51b	55a	56a	59	60	63c	104a
		B	45b	48	49	51b	55a	56a	59	60	63c	104a
		C	45b	48		51b	55a	56a	59	60	63c	104a
			29									
	C	A	42	43	44a	58	62					
		B	42	43	44a	58	62					
		C	42	43	44a	58	62	49				
	D	A	44b	61a								
		B	44b	61a								
		C	44b	61a								
	E	A	51									
		B	51									
		C	51									
VIII	A	A	29	67	97	100	101a	112	142	144	149	172
			176									
		B		67	97			112	142	144		172
			176	81	141	201	205	187				
		C		67				112	142			
								187				
	B	A	76b	81	94	98b	105b	109	187	203		
		B	76b	81	94	98b	105b	109		203		
		C		81	94	98b	105b	109		203		

Classification of Incidents into Categories and Subcategories

Effective Behavior										
Category	Subcategory	Judge	Incident Number							
IX	A	A	138							
		B	138	73	138	143	145			
		C	138			143	145	68	141	149	180

Classification of Incidents into Categories and Subcateogories

Category	Subcategory	Judge	Ineffective Behavior — Incident Number									
I	A	A	10	22b	52	122	131	146	177			
		B	10		52	122	131	146				
		C	10	22b	52	122	131	146				
	B	A	4	14	176	20	95					
		B	4		176	20	95					
		C	4	14	176	20	95					
	C	A	2	3	7	13	167b					
		B	2	3	7							
		C	2	3	7							
	D	A	9	166	167a	169	172	173	174	175	176	
		B	9 177	166	167a	169	172	173	174	175	176	13
		C	9 177	166	167a	169	172	173	174	175	176	13
	E	A	5a	6	8	16	17a	18	60			
		B	5a	6	8	16	17a	18	60	14		
		C	5a	6	8	16	17a	18	60			
	F	A	55a	120	121							
		B		120	121	22b						
		C	55a	120	121							
	G	A	124	132	133b	142						
		B	124	132	133b	142	55a					
		C	124		133b	142						
	H	A	128	129	141	160						
		B	128	129	141	160						
		C	128	129	141	160						
	I	A	15	25a	67	68a	126	130	133a	134	138	127
		B	15	25a	67	68a	126	130	133a	134	138	127
		C	15	25a	67	68a	126	130	133a	134	138	127

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Ineffective Behavior Incident Number					
II	A	A	147b	148	151	152	158	
		B			151	152	158	
		C		148	151	152	158	
	B	A	147c	155				
		B	147c	155	123	147b	148	153
		C	147c	155	123	147b		
	C	A	5b	159				
		B	5b	159				
		C	5b	159				
	D	A	38a	150				
		B	38a	150				
		C	38a	150				
	E	A	123	147a	153	154	156	157
		B		147a		154	156	157
		C			153	154	156	157

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Ineffective Behavior: Incident Number									
III	A	A	11	12	82							
		B	11	12	82							
		C	11	12	82							
	B	A	1	81	87	161	162	164				
		B	1	81	87	161	162	164				
		C	1	81	87	161	162	164				
	C	A	78	85	102	109						
		B	78		102	109						
		C	78		102							
	D	A	168	62b	75	83	86	88	89	90	97	105
			144	170								
		B	168	62b	75	83	86	88	89	90	97	105
			144	170	51	68b	85	167b				
		C	168	62b	75	83	86	88	89	90	97	105
			144	170	51							
	E	A	125	163	77							
		B	125	163	77							
		C	125		77							
	F	A	51	61								
		B		61								
		C		61								

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Ineffective Behavior — Incident Number									
IV	A	A	98	106	108	113	114	149	171	179c		
		B	98	106		113	114	149	171			
		C	98	106		113	114		171			
	B	A	69	92	96	136	162b					
		B		92	96	136						
		C	69	92	96	136	162b	13	70			
	C	A	179b	91	94	99	103	140	110b	111	112	115
			116	117a	117b	119						
		B		91		99	103	140	110b	111	112	115
			116	117a	117b		93					
		C	179b	91	94	99	103	140	110b		112	115
			116	117a	117b	119	93	179c				
	D	A	35	68b	93	101	107	110a	118	178	179a	
		B	35			101	107	110a	118	178	179a	108
			179c	179b								
		C	35	68b		101	107	110a	118	178	179a	
	E	A	70									
		B	70	69	149	162b						
		C	70				92					
V	A	A	79	19	40	41	42	43	44	45	46	47
			48	66	57	63	64	65	139	145	84	76
			80									
		B	79	19	40	41	42	43	44	45	46	47
			48	66	57		64	65	139	145		76
			80	37	49	111						
		C	79	19	40	41	42	43	44	45	46	47
			48	66	57		64	65	139	145	84	76
			80				28	140				
	B	A	23	49	50	62a	135	137				
		B	23		50	62a	135	137	63	84		
		C	23	49	50	62a	135	137			132	
	C	A	53	58	59	143						
		B	53	58	59	143						
		C	53	58	59	143						

Classification of Incidents into Categories and Subcategories

Category	Subcategory	Judge	Ineffective Behavior: Incident Number									
V	D	A	54	55b								
		B	54	55b	56							
		C	54	55b	56							
VI	A	A	24	25b	26	27	29a	29b	30	31		
		B	24	25b	26	27	29a	29b	30	31	32	33
			39									
		C	24	25b	26	27	29a	29b	30	31	32	33
			39	165	23a							
	B	A	21	23a	28	32	33	38b	39	100	165	
		B	21	23a	28			38b		100	165	34
			56									
		C	21							100		
				147a								
	C	A	36									
		B	36	94								
		C	36	325								
	D	A	71	74								
		B	71	74								
		C	71	74								
	E	A	73									
		B	73									
		C	73									
	F	A	22	34	37							
		B	22									
		C	22	34	37							
	G	A	104									
		B	104									
		C	104									
	H	A	72									
		B	72									
		C	72									

Classification of Incidents into Categories and Subcategories

Ineffective Behavior								
Category	Subcategory	Judge	Incident Number					
VII	A	A						
		B						
		C	16	76	85	108	109	149	116

APPENDIX E

AMERICAN PULPWOOD ASSOCIATION
HARVESTING RESEARCH PROJECT

REPLY TO: ONE CORPORATE SQUARE
ATLANTA, GEORGIA 30323
404-633-5137

SAMPLE LETTER AND QUESTIONNAIRE
REQUESTING WOOD SUPPLIERS TO RATE THE
RELEVANCY OF THE JOB PERFORMANCE CRITERIA

April 18, 1969

Dear Sir:

The APA-Harvesting Research Project is developing a method of evaluating pulpwood producers based on business ability, supervisory methods, ingenuity, etc. Because we feel that you arevery knowledgeable in this area we are asking for your help.

Although the questionnaire may look rather long, it should be of great interest to you since the examples are actual recorded incidents about the people you deal with. Your highly valued opinion is just a matter of a check-mark against one of the six choices.

The results of this survey will be combined with other research data which will be used to design a practical rating method that you may find very handy.

Please return your rating in the enclosed envelope no later than May 15, 1969.

Sincerely,

T. A. Walbridge, Jr.
Project Director

TAW,JR:ht
Enclosure

MAIN OFFICE
)5 THIRD AVENUE, NEW YORK, N. Y. 10016

BEHAVIORAL CATEGORIES AND SUBCATEGORIES
DEFINING EFFECTIVE AND INEFFECTIVE BEHAVIOR OF PULPWOOD PRODUCERS

The statements that follow define effective and ineffective behavior of pulpwood producers. By effective behavior, we mean the kind of performance which you might wish to cite to other producers, the kind of performance which you might wish to observe on the part of every producer, or the kind of performance which you believe contributes significantly to the accomplishment of the objectives of the producer's job. By ineffective performance, we mean the kind of performance which if it occurred repeatedly or even once under certain circumstances would cause you to doubt the competency of that producer. We would like you to rate each statement, that is, the behavior or performance that each represents, in terms of its importance in identifying a producer as effective or ineffective. An example of the behavior that each subcategory represents is provided. The examples are based on incidents which observers have actually seen occur.

Effective Behavior

I. Planning, Scheduling and Work Performance

A. Plans work with regard to weather conditions
Example: The producer planned the cutting of his timber in such a way that he could cut the low areas when the woods were dry and the hilly areas when the woods were wet.
extremely important_____ very important_____ important_____ unimportant_____ very unimportant_____ extremely unimportant_____

B. Set goals or quotas
Example: Each week the producer set a goal of how many cords of wood he wanted to cut.
extremely important____ very important____ important____ unimportant____ very unimportant____ extremely unimportant___

C. Uses week-ends to prepare for the following week of work
Example: The producer used Saturdays to repair his equipment so that he could be ready to work on Monday.
extremely important____ very important____ important____ unimportant___ very unimportant___ extremely unimportant___

D. Carries extra tools, equipment, or supplies
Example: The producer carried an extra power saw to the woods so that if one broke down he could replace it immediately and thus avoid any "down time."
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Doesn't waste timber
Example: The producer cut the timber according to the standard specified length and avoided any waste due to excessive trimming.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Works a full day or week regardless of circumstances
Example: During one of the hottest weeks on record, the producer remained in the woods and maintained his production at 85% efficiency.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

II. Safety

A. Dresses crew in clothing designed for safety
Example: The producer required all of his men to wear hard hats.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Recognizes and avoids potentially dangerous situations
Example: The producer would not allow his men to delimb a tree until the tree was lying on the ground. A saw has a tendency to kick back.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Keeps special "safety" equipment or supplies
Example: The producer always carried a first-aid kit.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

III. Financial Responsibility

A. Keeps books or records on all facets of his business
Example: The producer kept records so that at any given time, he could tell what margin of profit he was getting from his operation.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Establishes a good credit rating
Example: The producer established a credit rating with the local merchants.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Handles his own financing
Example: The producer was able to finance his own truck without the help of a dealer.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Purchases or replaces essential equipment
Example: When the producer experienced a lot of down time with his truck, he bought a new one.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Purchases highly mechanized equipment
Example: The producer bought a rubber tired skidder which enabled him to operate in bad terrain.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Makes wise financial investments
Example: The producer evaluated a tract of timber in terms of production cost and production profit before he agreed to harvest it.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

G. Saves money
Example: The producer set aside a $1.00 per cord for emergency use in his business.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant

H. Files social security and insurance
Example 1: A new producer obtained social security numbers for his men.
Example 2: A new producer put liability and collision insurance on his trucks so that he had full coverage for himself and his driver.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

IV. Operating Equipment

A. Repairs his own equipment

Example: When the hydraulic hose on a loader broke, the producer was able to make the necessary repairs himself.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Refuses to operate equipment in need of repairs
Example: When the producer noticed that a piece of equipment was not working properly, he immediately ordered that it be put aside until proper maintenance had been given.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

V. Public Relations

A. Goes out of his way to help a dealer or a producer
Example: The producer helped a dealer by offering to clean up a tract of timber that another producer had left in a mess.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Seeks advice of dealer on special problems
Example: The producer went to the dealer to ask his advice concerning the purchase of an expensive piece of harvesting equipment.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Keeps dealer informed of his operations
Example: The producer informed the dealer of how much he expected to cut that week.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Purchases all or most of his own timber
Example: The producer is able to make contact with the public to buy his own tracts of timber.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Is scrupulously honest
Example: When the producer learned that his crew had cut unmarked timber, he reported the incident and asked what he could do to remedy the situation.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Executes deeds which are recognized and commended
Example: A producer was using a road owned by a farmer. One Saturday the producer, on his own initiative, used his crew and equipment to improve the farmer's road.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

VI. Supervision

A. Remains with the crew constantly
Example: The producer remained with his crew all day to ensure that they did their job properly.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Gives instructions and explanations
Example: The producer went directly to each member of his crew and explained exactly how he wanted the timber cut.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Provides training
Example: The producer hired a man with no previous experience in the pulpwood business and trained him in the use of the chainsaw.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Sets minimum standards of behavior
Example: The producer required each man on his crew to work five days a week.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Organizes crew so that work is continuous
Example: The producer organized his crew in such a way that when his truck returned from the woodyard there was always a load of wood ready.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Allows group decisions
Example: The crew was against using a hydraulic loader. The producer allowed the loader to remain inactive until the crew tried it a couple of times and decided it was a good machine.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

G. Commands loyalty and respect
Example: The producer's crew worked with full initiative to harvest the wood and get it to the mill when the producer was absent.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

H. Operates in the role of a supervisor rather than as a worker.
Example: The producer did not drive his truck in order that he could remain on the job and direct his crew.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

VII. Use of Rewards

A. Pays good wages
Example: The producer pays his men minimum wage or better.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Provides incentives or bonus systems
Example: The producer told his men that if they exceeded so many cords by the end of the week, he would give each man a case of beer.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Does special favors for the crew at his own inconvenience.
Example: The producer bought a truck with a shelter to protect his crew from the rain when they were being transported to and from the woods.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Provides rest breaks
Example: The producer gives his crew a rest break in the morning and another in the afternoon.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Initiates a spirit of competition
Example: The producer divided his crew into two groups and kept each group informed of the production rate of the other. This resulted in intense competition between the two groups.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

VIII. Shows Ingenuity

A. Devises, initiates, improves or changes a method or procedure
Example: When a big stick loader is used to haul wood, the bundle may become lodged against a tree. Most producers loop the cable back around the end of the bundle, pull it free and in doing so, scatter the bundle. This producer discovered a better method. He unhooked his cable and rehooked it at a different location along the line. The bundle is freed and keeps its original shape.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Devises, designs, or improves a tool or equipment
Example: The producer improved his method of loading by rigging up a knuckle boom loader on the back of his truck.
extremely important___ very important___ important___
unimportant ___ very unimportant___ extremely unimportant___

Ineffective Behavior

I. Planning, Scheduling and Work Performance

A. Cannot or will not work in wet weather
Example: A producer who had cut the timber closest to his road during the dry weather was unable to cut wood that was away from the road when it rained.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Does not use week-ends to prepare for the following week of work
Example: The producer waited until Monday to repair a saw which had been broken since Friday.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Loafs on the job
Example: When the truck left the woods for the mill, the producer and his crew sat in the shade until the truck returned.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Does not carry extra tools or supplies
Example: Because the producer did not have a shovel, he lost three hours of production time trying to free his truck from the mud.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Does not work a full day or week
Example: The producer did not go to work until Wednesday.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Does not fell trees according to proper procedure
Example: The producer did not account for the lean of the tree when he began to saw. The tree fell and pinched the saw. The producer had to wait 20 minutes for his skidder to pull the tree down.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

G. Does not cut stumps to the proper level or height
Example: The producer left stumps above the recommended height thus making future seeding and planting difficult.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

H. Does not cut wood according to specified standards
Example: Because the producer failed to cut the wood in 5'3" lengths, he had to waste wood as well as time by trimming every load of wood he brought to the woodyard.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

I. Leaves merchantable timber
Example: The producer did not cut the timber in the rougher areas of the tract.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

II. Safety

A. Operates or allows operation of equipment which lacks protective features.
Example: The producer does not have protective canopies on his skidding equipment.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Allows the operation of equipment in an unsafe manner
Example: The producer held a chainsaw above his shoulder while he was delimbing a tree.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Allows the use of alcoholic beverages on the job
Example: The producer permitted one of his men to work while under the influence of alcohol.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Permits fires in the woods
Example: On a cold day, the producer allowed his crew to light a fire to warm their hands. The fire burned four acres of timber.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Involves others in dangerous or fatal incidents
Example: The producer instructed a man to go under a lodged tree and cut it down.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

III. Financial Responsibility

A. Lacks proper accounting procedures
Example: A producer who had made over $10,000 profit was broke at the end of the year. He had no records to indicate what had happened to his money.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Lacks credit
Example: The producer cannot make any purchases without the dealer guaranteeing the payments.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Purchases highly mechanized equipment unwisely
Example: The producer bought an expensive piece of equipment because he liked the way it looked, even though the usefulness of the machine was limited in the area in which he was working.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Makes poor financial investments
Example: A producer who owed a lot of money on his tractor and truck bought a yellow convertible instead of using the money to pay off his debts.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Fails to file for Social Security and insurance
Example 1: A producer who did not make deductions for Social Security received a bill from the Federal Government for $1100.
Example 2: A producer who did not have insurance on his truck was involved in an accident. The State took his license plates and his driver's license. Now he is out of business.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Intentionally remains in debt
Example: A producer did not pay off his debt to a dealer in the hope that the dealer would continue to give him timber in preference to other producers.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

IV. Operating Equipment

A. Operates equipment in need of maintenance
Example: The producer continued to operate his truck after a limb had punctured the radiator. The truck made one load to the woodyard before the motor burned up.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Repairs equipment improperly
Example: A producer who was having trouble with the axle bolts on his truck welded the axle. Within two weeks the bearings were ruined and one wheel fell off.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Abuses equipment
Example: The producer did not cut any roads for his tractor. Within three months he had repair bills exceeding $700.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Fails to get maximum use from his equipment
Example: The producer and his son loaded the wood by hand instead of using their loader.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Lacks mechanical aptitude
Example: The producer worked for two hours on a nut which

had come loose on the clutch of his truck. Finally a second producer came along and fixed it for him within five minutes.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

V. Public Relations

A. Unethical conduct
Example: The producer let the scale stick drop eight inches when the scaler was scaling his wood.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Does not cut timber according to the landowner's wishes
Example: The producer cut timber which the landowner had told him not to touch.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Cuts unmarked timber
Example: The producer cut a half acre of unmarked timber in order to build a road.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Destroys property unnecessarily
Example: The producer's men cut a tree which fell across a power line.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

VI. Supervision

A. Does not stay in the woods with the crew
Example: The producer hung around a filling station while his crew remained in the woods without supervision.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

B. Does not give instructions or explanations regarding proper procedures
Example: The producer did not tell his men to observe a particular boundary line. The crew cut timber belonging to someone else.

extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

C. Does not provide training
Example: The producer allowed a man with no experience to operate an expensive piece of machinery.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

D. Loses control of emotions in his interactions with the crew
Example: The producer yelled and cursed at his crew because they were not working in a manner that pleased him. The next day most of his crew quit.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

E. Breaks promises to the crew
Example: The producer told his crew that as soon as they cut four loads of wood they could knock off for the day. The crew worked hard so that they could finish early. When the four loads had been cut the producer announced that since it was early the crew should cut another load.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

F. Operates as a member of the crew rather than as a supervisor
Example: If a saw needs filing or a tree needs cutting, the producer does it himself rather than assigning the task to a member of his crew and leaving himself free for supervision.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

G. Doesn't enforce his commands
Example: The producer did not reprimand the crew for disobeying his commands.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

H. Distracts crew from their tasks
Example: The producer stopped his skidder operator from doing his work to tell him about the fish that he had caught the previous day.
extremely important___ very important___ important___
unimportant___ very unimportant___ extremely unimportant___

Please circle the state in which you are employed:

Virginia	North Carolina	South Carolina	Georgia
Florida	Tennessee	Alabama	Texas
Mississippi	Louisiana	Arkansas	Other_____ (please specify)

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